We claim:

1. A method for determining a concentration of at least one analyte in a sample contained in a blood bag or in tubing in fluid communication with said blood bag, using an instrument comprising at least one calibration algorithm for said at least one analyte, said method comprising:

a) irradiating said sample in said tubing, or said blood bag, using a radiation source of about 475 nm to about 2,700 nm;

b) measuring absorbance from said sample for said at least one analyte; and

c) calculating a concentration of said at least one analyte using said absorbance and said at least one calibration algorithm.

2. The method of claim 1 wherein in said step of calculating (step c)) combines first derivatives of at least two portions of a spectrum generated from said absorbance to provide said concentration.

3. The method of claim 1 wherein said blood bag, or said tubing is translucent and contains writing on its surface and irradiation is transmitted through said writing, said blood bag or said tubing, and said sample contained in said blood bag or said tubing.

4. The method of claim 1 wherein said step of irradiating (step a)) includes reflecting radiation from a reflective surface placed behind said blood bag or said tubing.

5. The method of claim 2 wherein in said step of measuring (step b)), light leakages are compensated for by measuring dark current for both sample and reference measurements.

6. The method of claim 2 wherein the at least one analyte is selected from the

group consisting of haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue and cross-linked haemoglobin.

7. The method of claim 6 wherein in said step of measuring (step b)) said absorbance measurement for said at least one analyte is incorporated into an algorithm selected from the group consisting of haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue, cross-linked haemoglobin, and a combination thereof, and said concentration of said analyte in said sample is determined.

8. A method for determining a concentration of one or more of haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue and cross-linked haemoglobinin in a sample contained in a blood bag or in tubing in fluid communication with said blood bag, using an instrument comprising one or more calibration algorithms for each of said haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue and cross-linked haemoglobin, said method comprising:

a) irradiating said sample in said tubing or said blood bag using a radiation source of about 475 nm to about 2,700 nm;

b) measuring absorbance from said sample for said one or more of haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue and cross-linked haemoglobin; and

c) calculating a concentration for one or more of said haemoglobin, bilirubin, biliverdin, equivalent intralipid, methylene blue and cross-linked haemoglobinusing said absorbance and said one or more calibration algorithms, by combining first derivatives of at least two portions of a spectrum generated from said absorbance to provide said concentration.